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ABSTRACT

A determination of the optimal time needed for treatment of various types of third-grade remedial readers in the Broward County, Florida Reading Center Remedial Program was sought. As students were admitted into the program, they were given a pretest and randomly assigned to one of four groups. Each group received either 2, 3, 4, or 5 months of treatment before they were post-tested. Two forms of the Gates-MacGinitie Reading Tests, Primary B served as the pretest and post-test. A behavior rating inventory was also completed upon the student's entrance into the program and again at the time of post-testing. The following conclusions were reached: (1) Pupils' progress in the Center depended on how long they were there. (2) The greatest growth in reading skills appeared to take place during the fourth month of remedial reading instruction. Growth increased each month, but seemed to be leveling off by the fifth month. (3) Race, sex, and pretest scores did not influence the benefits pupils received from being in the Center for different lengths of time, and (4) There were no indications of any changes in behavior which might have been caused by improved reading skills during the short treatment periods. Limitations of and recommendations for the program are discussed, and tables and appendixes are included. (Author/AW)

ED 059845

EVALUATION OF

THE READING CENTER'S REMEDIAL PROGRAM

FOR THE 1970—71 SCHOOL YEAR

(A Title I Project)

U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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RE 004 019

The School Board of Broward County, Florida

Benjamin C. Willis, Superintendent of Schools

Report No. 51 Research Department December 1971

ABSTRACT

The purpose of this year's study of the Reading Center program was to determine the optimal amount of time needed for treatment of various types of pupils accepted into the Center's remedial program. It was hoped this study would provide valuable information regarding the growth curves for students with different academic and personality characteristics and indicate how long it would take these students to reach points of diminishing returns in terms of gain scores.

As students were admitted into the program, they were given a pretest and randomly assigned to one of four groups. Each group received either two, three, four, or five months treatment before they were given a posttest. Two forms of the Gates MacGinitie Reading Tests, Primary B served as the pre- and posttests. A Behavior Rating Inventory was also completed upon the student's entrance into the program and again at the time the posttest was given.

The following conclusions were reached:

1. Pupils' progress in the Center depended upon how long they were there.

2. The greatest growth in reading skills appeared to take place during the fourth month of remedial reading instruction. Growth increased each month, but seemed to be leveling off by the fifth month.

3. Race, sex, and pretest scores did not influence the benefits pupils received from being in the Center for different lengths of time. This means students classified in terms of these categories progressed as was indicated in the first and second conclusions above.

4. There was no indication that there were any changes in behavior which might have been caused by improved reading skills during the short treatment periods.

EVALUATION OF THE READING CENTER'S REMEDIAL PROGRAM

FOR THE 1970-71 SCHOOL YEAR

Submitted to

The School Board of Broward County, Florida
Benjamin C. Willis, Superintendent

By the

Research Department
Report No. 51
December 1971

FOREWORD

The Reading Center and its five subcenters provided diagnostic and remedial services for improving the reading and language skills of 600 Broward County students during the 1970-71 school year. The staff of the Centers consisted of carefully selected specialized personnel who contributed a wide variety of teaching talents to a flexible and innovative program. The professional staff was composed of a supervisor of clinical reading services, a clinician, a program co-ordinator, a graphics specialist, a liaison teacher (for parochial schools), twenty (20) reading teachers, ten (10) teacher aides, a school nurse, and a part-time speech pathologist.

Thanks are due Mrs. Irene Crain for preparing the manuscript and the following persons for collecting data and providing discussions for this report: Dr. William V. Meredith, Miss Louise Sears, Mrs. Maude Storr, Mrs. Darline Utry, and Miss Carolyn Boyd.

The Reading Center has published a 74-page booklet, "Guide to Teaching for Teachers of the Reading Centers," which explains in detail the remedial reading program. This publication discusses personnel, the diagnosis of students' reading deficiencies, the various techniques of remedial instruction, forms used in communicating with teachers and parents of the students, diagnostic instruments, and references to the materials used. This guide may be obtained by writing Louise Sears, Supervisor, The Reading Center of Broward County, 701 Northwest 31st Avenue, Fort Lauderdale, Florida, 33311.

Thomas M. Banks

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Mean Raw Scores for Gates-MacGinitie Reading Comprehension Test 15

EVALUATION OF THE READING CENTER'S REMEDIAL PROGRAM FOR THE 1970-71 SCHOOL YEAR

The Reading Center is a part of the reading program in the elementary schools of Broward County. It was designed to provide diagnostic and special remedial reading services to third-year students in disadvantaged schools, using Title I appropriations.

During the 1970-71 school year, five subcenters were located in the strategic economic and geographic areas throughout the county nearer the child's regular school. The subcenters, which eliminated the necessity of having to bus students long distances, offered the same developmental and remedial assistance as the centrally located Reading Center.

Continuous evaluations over a four-year period have been concerned with the following aspects of the Reading Center program:

1. Family background and characteristics (physical and mental) of students enrolled.

2. Trends in gain scores in reading associated with the amount of time students were enrolled in the Center program.

3. The effects of the reading program on students enrolled in the Center as compared to a control group.

4. The effects of the addition of enrichment activities to the intensive reading instructions.

5. Comparison of reading gains for one year with gains of previous years.

6. Retention of gains made by students one year after being dismissed from the Center in comparison with a control group.

7. The effects of personality traits and behavior on the length of time students were retained in the Center.

Purpose

The purpose of this study was to determine the optimal amount of time needed for treatment of various types of pupils accepted into the Center's remedial program. It was hoped this study would provide valuable information regarding the growth curves for students with different academic and personality characteristics and indicate how long it would take these different students to reach points of diminishing returns in terms of gain scores.

Procedure

As students were admitted into the Reading Center program, they were randomly assigned to four groups which were designated as Groups II, III, IV, and V, with the group number corresponding to the number of months of treatment each group would receive before being given a posttest. The Gates-MacGinitie Reading Tests, Primary B, Form 1 was administered as a pretest when the student was admitted to the Center program. On completion of the required remedial treatment, another form of the same test (Form 2) was administered as a posttest. A Behavior Rating Inventory[1] (see Appendix A) was also completed on each student by his regular classroom teacher upon the student's entrance into the program and again at the time the posttest was given. Complete pre- and posttest data were collected on 182 students.

Treatment

Pupils who showed evidence of having reading difficulty were identified by the classroom teachers and referred to the Centers. Those pupils who were diagnosed as disabled readers with enough disability to warrant the specialized services of the Reading Center program were enrolled.

Initial screening for acceptance included the Otis Mental Ability Tests--Short Form and the Gray Oral Reading Test. The results of these tests and additional data obtained from the classroom teacher and school records were evaluated. Pupils who met the criteria of having average mental aptitude (usually 85-105) and had a discrepancy of a year or more between actual reading performance level and apparent reading expectancy were eligible for acceptance into the program.

Upon enrollment, each student was assigned to an instructional team composed of two or more staff members who supervised the remedial program for students assigned to their teams. Team members completed the testing by administering the Gates-MacGinitie Reading Tests and the Center's Informal Diagnostic Skills Test. Information from these tests and the screening data was assimilated, studied, and used as a basis for prescribing the student's initial instructional program. Each child's program was carefully structured to include needed emphasis on development of self-concept, language facility, and encoding and decoding skills.

The remedial procedures consisted of a diagnostic-prescriptive approach based upon programming of instructional strategies to correct the deficiencies in specific skills. The Center's Skills Checklist, which identifies a sequence of specific skill items, provided a ready reference of each student's needs in regard to specific skills. The student worked with an individualized prescription that varied from day to day and

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[1]This instrument was developed at the University of Chicago under U.S.O.E. Contract No. 519 for a study entitled "Techniques for Assessing Social Abilities of Children and Parents in Head Start," 1965.

included activities for word recognition skills, comprehension skills, language facility, reading appreciation, and listening.

Each student was made aware of the nature of his reading disabilities and was helped in establishing realistic short-term goals based on his individual needs. The materials and activities listed on the prescriptions were selected in terms of their appropriateness for each particular child's behavior patterns, developmental level, and deficiencies in specific skills. The student's utilization of the instructional period of one and one-half hours was kept flexible. Usually a student spent one-half of the time in word recognition and comprehension activities and the other half in activities related to language facility and reading appreciation. The amount of time the student received direct tutoring, self-directing activities, and differentiated tasks varied and was based on the nature of each child's reading problems. As pupils showed increasing growth in mastery of skills and self-direction, less and less time was allocated for the direct tutoring sessions.

Limitations

Originally, 216 students had been assigned to the four groups with 54 students in each group. Twenty students from Groups II, III, and IV combined moved away or withdrew from the remedial program. In addition, 14 students from Group V had to be dropped from the study due to their mobility or the impossibility of being provided with a sufficient amount of treatment as required by the design of the study. It was often difficult for some students in Group V who were admitted later in the school year (November or December) to be present for remedial reading treatment the required 110 days (five months), especially if the students were absent frequently. Before being given the posttest, it was necessary for students in Group V to have attended the Center for five months. For a more exact study, it would have been desirable to have complete data on all 216 students.

Due to the time factor, data on students in the study were limited to those with five months of treatment. Better answers may have been obtained if data from students with six, seven, or eight months of treatment could have been studied.

Results

A summary of the mean scores and standard deviations obtained by sixteen groups of students (grouped by sex, race, and the amount of treatment received: 2 x 2 x 4) is reported in Appendix B. A three-way analysis of covariance was conducted on the posttest means of the vocabulary and comprehension tests for these groups, with the aptitude and corresponding pretest scores as covariates. A summary of this analysis is reported in Appendix C. For both vocabulary and comprehension, it was found that there was no significant difference between the mean posttest scores for boys and girls. Sex did not seem to make a difference in the amount of gains made.

Race did not seem to make a difference in relationship to the length of treatment on either test. White students scored significantly higher on the vocabulary test (see Appendix C). This difference, however, was not due to the remedial reading treatment, but due instead to factors present prior to the students entering the Reading Center.

The amount of treatment students received had a definite effect on their vocabulary and comprehension posttest scores. The adjusted posttest scores are reported in Table 1 and shown graphically in Figure 1. For each longer period of treatment, the group of students made higher posttest scores. The difference in posttest scores explained by amount of treatment was significant at the .001 level.

TABLE 1

ADJUSTED POSTTEST SCORES
FOR THE GATES-MacGINITIE READING TESTS, PRIMARY B

Group	Length of Treatment	n	Posttest Vocabulary	Posttest Comprehension
II	44 days	49	2.283*	2.060
III	66 days	49	2.407	2.336
IV	88 days	44	2.872	2.722
V	110 days	40	3.014	2.801

*Grade Equivalent Scores

From Table 2, it can be seen that gains were made at all four intervals, but with greater gains being made during the fourth month of treatment. There is a marked difference between the groups with four- and five-months treatment. There was a decrease in the amount of gain during the fifth month. It appears that there may be diminishing returns in terms of both vocabulary and comprehension gain scores after four months of remedial reading.

During the fourth month of treatment in the Reading Center program, students made gains of .465 years in vocabulary and .386 years in comprehension. During the fifth month, students made a gain of .142 years in vocabulary. This is still an acceptable gain, but far less than the outstanding gain of .465 years made during the fourth month. There was a gain of only .079 years made on comprehension during the fifth month of treatment.

FIGURE 1

ADJUSTED POSTTEST READING SCORES
FOR GROUPS OF STUDENTS RECEIVING VARYING AMOUNTS OF TREATMENT

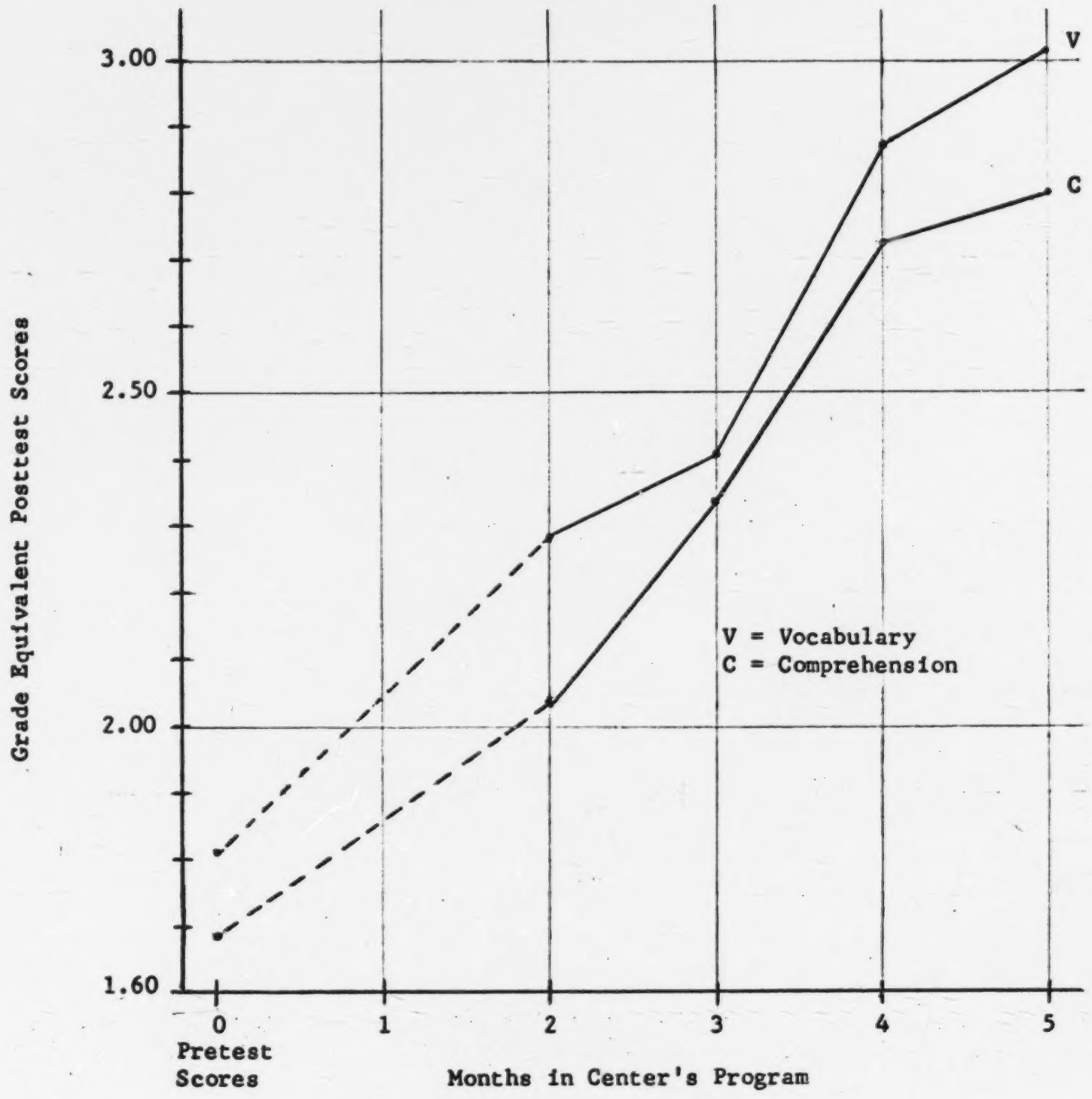

TABLE 2

ADJUSTED GAIN SCORES[a]
FOR FOUR DIFFERENT AMOUNTS OF TREATMENT

	Vocabulary	Comprehension
Group II	.234[b]	.187[b]
III	.124	.276
IV	.465	.386
V	.142	.079

[a]Gain scores are expressed in years. Gain in months can be obtained by multiplying each number by 10: .234 years = 2.34 months.

[b]Average gain made during the first and second months of treatment.

Because of the small number of cases in some cells in the 2 x 2 x 4 factorial design, it was impossible to test the assumption of equal regression hyperplanes within this design. Such an analysis was carried out within a two-factor, race-by-treatment design. The tests for equality of regression were nonsignificant. In layman's terms, this indicates that pupils who scored higher on the pretests did not benefit any more from the treatment than those with lower pretest scores.

These analyses can be summed up as follows: 1) Pupils' progress in the Center depended primarily upon how long they were there. 2) Growth seemed to level off after the fourth month of treatment.

Discussion

Growth was also a function of factors other than time in the Center. A study involving a control group would be required to take such factors into account in determining how much being in the Center uniquely benefited participants. This has been done in the past and Center students were found to exceed controls on criterion reading posttests administered immediately after treatment and on follow-up testing one year after treatment.

Insofar as boys and girls, blacks and whites, and persons with high and low pretest scores constitute "types" of pupils, progress due to time in the Center followed the same trend for all "types." In other words, no basis was found for recommending that some "types" of pupils, (e.g., girls with low pretest scores) might benefit more from staying in the Center for longer periods of time than other "types" (e.g., white boys).

It has been the practice of many persons involved in reading instruction to compute the average gains made per month by students receiving remedial help. These average gains in raw scores for the four groups of students are reported in Appendix D for the benefit of those persons who prefer to make this type of comparison. From the data in Appendix D, it can be seen that the students gained over two months in vocabulary and comprehension each month they were enrolled in the Center's program. The greatest average gains were made by students who had four months of treatment; they gained over .271 years (2.7 months) for each month in the Center. But average gain scores assume that reading achievement increases continuously and equally at all stages of remedial instruction. Problems involving test reliabilities and regression effects are other factors which may create distortions when gains per month are calculated as time, rate, and distance problems. Distances along a test scale cannot be regarded in the same way as measures of time or mileage because, inter alia, an individual's obtained score on a test contains an error component associated with test reliability. This error component is of practical significance in interpreting gain scores. Such errors of measurement need not be considered in solving simple time, rate, and distance problems.

Behavior Rating Scores

Analyses of the results of the Behavior Rating Inventory did not indicate any changes in behavior which might have been caused by improved reading skills. It was also found that behavior rating items showed no significant relationships with achievement test results. This precluded using scores on these items in analyses of possible differences in how long different types of pupils should remain in the Center. The majority of students fell within a narrow range of aptitude scores and had poor achievement prior to entering the Reading Center. They did not appear to have personality characteristics or behavior that varied too widely. Approximately sixty teachers completed the inventories, each having her own "personal" set of criteria for evaluating or rating the students. Restrictions of range and possible unreliabilities of measurement are thus posited as factors which prevented utilizing the behavior rating results as intended in the research design.

Recommendations

1. Since students made far less growth in both vocabulary and comprehension during the fifth month of treatment than during the fourth month, it should be of interest to determine if this pattern continues into the sixth month of treatment. During the 1971-72 school year, students should be randomly assigned into time groups again for treatment, but this time in intervals of two, four, and six months. The results of this study should provide additional information regarding a longer growth curve of students receiving remedial reading instruction.

2. The attitudes of students toward reading should be examined during the next evaluation. Attitudes can be measured before and after

the remedial reading treatment. This study should tell us whether or not the student's attitude improves as he improves his skills in reading or becomes a more competent reader. It is of interest to know if the student's attitude improves as his skills improve with a greater amount of treatment. This should provide the type of information originally sought through the use of the behavior rating instrument.

Conclusions

1. Pupils' progress in the Center depended upon how long they were there.

2. The greatest growth in reading skills appeared to take place during the fourth month of remedial reading instruction. Growth increased each month, but seemed to be leveling off by the fifth month.

3. Race, sex, and pretest scores did not influence the benefits pupils received from being in the Center for different lengths of time. This means students classified in terms of these categories progressed as was indicated in the first and second conclusions above.

4. There was no indication that there were any changes in behavior which might have been caused by improved reading skills during the short treatment periods.

APPENDIXES

APPENDIX A

BEHAVIOR RATING INVENTORY

Child's Name_____ School_____

Student Number_____ Teacher's Name_____

	No	Yes
1. Did student have Head Start?	1	2
2. Did student have over six months of some other preschool program?	1	2

Please rate the above child as he stands now in the following areas:

ACHIEVEMENT	Unsatisfactory	Poor	Fair	Good	Excellent
3. Reading	1	2	3	4	5
4. Math	1	2	3	4	5
5. Handwriting	1	2	3	4	5
6. Citizenship	1	2	3	4	5
PERSONAL CHARACTERISTICS					
7. Attitude Toward School	1	2	3	4	5
8. Personal Appearance	1	2	3	4	5
9. General Health	1	2	3	4	5
10. Cooperativeness of Parent or Guardian	1	2	3	4	5
	Very Low	Low	Moderate	High	Very High
11. Socio-Economic Status	1	2	3	4	5
12. How much progress has this child made since starting this fall?	None 1	2	3	Some 4	5 6 Much 7
13. How does the child's present level of performance compare with his classmates?	Below 1	2	3	About the Same 4	5 6 Above 7

Please rate how this child behaves by circling one of the seven responses to each question.

	Not At All Like	Very Little Like	Some-what Like	Pretty Much Like	Quite A Bit Like	Very Much Like	Exactly Like
14. Is usually carefree, rarely becomes frightened or apprehensive.	1	2	3	4	5	6	7
15. Talks eagerly to adults about his own experiences and what he thinks.	1	2	3	4	5	6	7
16. Often keeps aloof from others because he is uninterested, suspicious or bashful.	1	2	3	4	5	6	7
17. Tries to figure out things for himself before asking adults or other children for help.	1	2	3	4	5	6	7
18. Has little respect for the rights of other children; refuses to wait his turn, takes toys other children are playing with, etc.	1	2	3	4	5	6	7
19. Seems disinterested in the general quality of his performance.	1	2	3	4	5	6	7
20. When faced with a difficult task, he either does not attempt it or gives up very quickly.	1	2	3	4	5	6	7
21. Likes to talk or socialize with teacher.	1	2	3	4	5	6	7
22. Requires the company of other children; finds it difficult to work or play by self.	1	2	3	4	5	6	7
23. Is eager to inform other children of the experiences he has had.	1	2	3	4	5	6	7
24. Appears to trust in his own abilities.	1	2	3	4	5	6	7
25. Responds to frustration or disappointment by becoming aggressive or enraged.	1	2	3	4	5	6	7
26. Is constricted, inhibited or timid; needs to be urged before engaging in activities.	1	2	3	4	5	6	7

	Not At All Like	Very Little Like	Some-what Like	Pretty Much Like	Quite A Bit Like	Very Much Like	Exactly Like
27. Asks many questions for information about things, persons, etc. (Emphasis here should be on question prompted by genuine curiosity rather than bids for attention.)	1	2	3	4	5	6	7
28. Emotional response is customarily over-strong; over-responds to usual classroom problems, frustrations and difficulties.	1	2	3	4	5	6	7
29. Is lethargic or apathetic; has little energy or drive.	1	2	3	4	5	6	7
30. Is often quarrelsome with classmates for minor reasons.	1	2	3	4	5	6	7
31. Demonstrates imaginativeness and creativity in his use of things and play materials.	1	2	3	4	5	6	7
32. Does not need attention or approval from adults to sustain him in his work or play.	1	2	3	4	5	6	7
33. Has a tendency to discontinue activities after exerting a minimum of effort.	1	2	3	4	5	6	7
34. Goes about activities with a minimum of assistance from others.	1	2	3	4	5	6	7
35. Insists on maintaining his rights, e.g., will not yield his place at painting or at the carpentry bench, etc.; insists on getting his turn on the slide or at group games, etc.	1	2	3	4	5	6	7
36. Often will not engage in activities unless strongly encouraged.	1	2	3	4	5	6	7

APPENDIX B

SUMMARY OF MEAN SCORES AND STANDARD DEVIATIONS
MADE BY STUDENTS RECEIVING REMEDIAL READING INSTRUCTION
ON THE GATES-MacGINITIE VOCABULARY AND COMPREHENSION READING TESTS
PRIMARY B

Sex-Race	Group[a]	n		Mean IQ	Pre Vocab.	Pre Comp.	Post Vocab.	Post Comp.
Girls-Black	II	11	M	90.455[b]	1.555[c]	1.555	1.827	1.945
			SD	6.006[b]	0.336	0.181	0.441	0.557
	III	19	M	91.789	1.758	1.789	2.284	2.500
			SD	5.127	0.548	0.648	0.896	1.141
	IV	15	M	88.733	1.473	1.680	2.453	2.547
			SD	5.637	0.243	0.404	0.858	0.982
	V	10	M	90.300	1.570	1.450	2.430	2.340
			SD	4.739	0.386	0.151	0.636	0.853
Girls-White	II	7	M	92.000	2.371	1.829	3.014	2.757
			SD	7.703	0.642	0.359	0.667	0.913
	III	6	M	98.000	1.817	1.533	2.500	2.167
			SD	8.025	0.417	0.250	0.704	0.905
	IV	3	M	105.000	2.633	1.700	3.567	2.800
			SD	6.083	0.945	0.700	1.504	0.520
	V	7	M	93.714	1.643	1.614	2.929	2.943
			SD	6.921	0.190	0.426	0.816	0.846
Boys-Black	II	18	M	89.944	1.672	1.578	1.922	1.689
			SD	5.173	0.540	0.366	0.669	0.392
	III	13	M	89.615	1.638	1.654	2.092	2.177
			SD	9.518	0.684	0.552	1.103	1.262
	IV	19	M	93.368	1.689	1.637	2.416	2.532
			SD	8.558	0.403	0.425	0.778	0.927
	V	13	M	91.923	1.754	1.631	2.969	2.623
			SD	6.006	0.459	0.317	0.696	0.792
Boys-White	II	13	M	99.769	2.069	1.708	2.685	2.138
			SD	9.532	0.728	0.516	0.874	0.693
	III	11	M	101.636	2.318	1.864	3.045	2.700
			SD	7.215	0.551	0.427	1.004	0.843
	IV	7	M	101.000	2.100	1.771	3.843	3.257
			SD	14.189	0.658	0.522	0.744	1.080
	V	10	M	100.700	2.180	2.050	3.580	3.330
			SD	12.508	0.707	0.587	1.508	1.494

[a]Group number refers to months of treatment received at the Reading Center.

[b]Upper number is the Mean; lower number is Standard Deviation.

[c]All scores are Grade Equivalent Scores.

APPENDIX C

SUMMARY OF THREE-WAY ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON GATES-MacGINITIE READING TESTS ADJUSTED FOR DIFFERENCES IN APTITUDE AND PRETEST SCORES

	n	Posttest Vocabulary	Posttest Comprehension
Between Sexes:			
Boys	104	2.645	2.569
Girls	78	2.643	2.392
	182		
Between Races:			
Black	118	2.507	2.505
White	64	2.782**	2.455
	182		
Between Treatments:			
Group II	49	2.283	2.060
Group III	49	2.407	2.336
Group IV	44	2.872	2.722
Group V	40	3.014***	2.801***
	182		

**Mean difference significant at .01 level.

***Mean differences significant at the .001 level.

APPENDIX D

MEAN RAW SCORES
FOR GATES-MacGINITIE READING VOCABULARY TEST

Group	n	Pretest	Posttest	Total Gain (Years)	Average Gain Per Month	Gain Made During Interval
II	49	1.880	2.317	.437	.219[a]	.219[a]
III	49	1.931	2.558	.627	.209	.241
IV	44	1.863	2.947	1.084	.271	.389
V	40	1.822	3.032	1.210	.242	.085

[a]Average monthly gain made during first two months.

MEAN RAW SCORES
FOR GATES-MacGINITIE READING COMPREHENSION TEST

Group	n	Pretest	Posttest	Total Gain (Years)	Average Gain Per Month	Gain Made During Interval
II	49	1.650	2.068	.418	.209[a]	.209[a]
III	49	1.762	2.492	.730	.243	.424
IV	44	1.713	2.806	1.093	.273	.314
V	40	1.695	2.824	1.129	.226	.018

[a]Average monthly gain made during first two months.